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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
Robert A. FERSTENBERG et al.) Group Art Unit: 3622
Serial No. 09/209,815) Examiner: James W. Myhre
Filed: December 11, 1998) January 10, 2003
For: COMPUTER METHOD AND)
SYSTEM FOR INTERMEDIATED)
EXCHANGE OF COMMODITIES)

TRANSMITTAL OF APPEAL BRIEF

RECEIVED

JAN 15 2003

GROUP 3600

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Enclosed in connection with the above-referenced application is an Appeal Brief with Appendix in triplicate. A check is enclosed to cover the following fees: \$320.00 to cover the fee for filing a brief in support of a notice of appeal.

Also, please charge any additional fees or credit any overpayment to Deposit Account No. 02-2135. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

ROTHWELL, FIGG, ERNST & MANBECK, p.c.

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Dariusz Glos
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on
Appeal
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of) **BEFORE THE BOARD OF PATENT**
Robert A. FERSTENBERG et al.) **APPEALS AND INTERFERENCES**
Serial No. 09/209,815)
Filed: December 11, 1998)
For: COMPUTER METHOD AND)
SYSTEM FOR INTERMEDIATED)
EXCHANGE OF COMMODITIES)

Appeal No.:

Examiner: James W. Myhre

Group Art Unit: 3622

BRIEF ON APPEAL

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JAN 15 2003

GROUP 3600

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

This is an appeal from the final rejection of claims 116-121, 123 and 125-147 of the above-identified application, which claims were finally rejected in the Office action dated October 8, 2002. A Notice of Appeal was filed on January 8, 2003. No additional fees for the Notice of Appeal are due, since such fees already have been paid in conjunction with the prior Notice of Appeal filed July 31, 2002.

REAL PARTY IN INTEREST

The real party in interest in this case is ITG Inc. of New York, N.Y.

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RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the present appeal.

STATUS OF THE CLAIMS

Claims 116-121, 123 and 125-147 are pending in the application. Claims 1-115, 122 and 124 have been cancelled. Claims 116-121, 123 and 125-147 stand finally rejected. Claims 116, 129 and 140 constitute the independent claims on appeal. This appeal is directed to claims 116-121, 123 and 125-147.

STATUS OF AMENDMENTS

No proposed amendment subsequent to the outstanding final Office action has been filed in this application. It is noted that the Amendment After Final filed on July 31, 2002 has been entered, pursuant to a Decision on Petition dated September 11, 2002 withdrawing the finality of the premature final rejection mailed on May 3, 2002.

SUMMARY OF THE INVENTION

The present invention relates generally to the field of electronic commerce, and in particular to a computer-implemented method for exchange of commodities using intermediation by a third party. The present application is a continuation of U.S. Patent No. 5,873,071; a Terminal Disclaimer was filed in this application on February 25, 2002.

According to the invention, electronic negotiated trading of commodities is carried out among a number of participants through a third-party intermediary. As shown in Fig. 1, a computer-based system according to one preferred embodiment includes an intermediary 3, and a number of participants represented as "e-agents" 1, who communicate with the intermediary through exchange of electronic messages via communication links 2. An example of hardware implementing the system shown in Fig. 1 is illustrated in Fig. 4.

A flow diagram illustrating a basic operational flow according to one embodiment of the invention is shown in Fig. 2, wherein at the start of the negotiation, participants submit opening messages to the intermediary at step 11. The opening messages indicate commodities which the participant desires to buy and/or sell, and the maximum amounts to exchange. In response to the received opening messages, at step 12 the intermediary generates electronic offer messages listing commodities offered for sale and/or purchase, and sends them to the participants. Because the participants collectively may seek to purchase more units of a commodity than they seek to sell, or vice versa, the intermediary's initial offer allocates the total quantity offered by all the participants among all the participants interested in buying or selling. For example, as shown in Table 1 at page 33 (col. 18 of the '071 patent), participants Moe, Larry and Curly each submit opening messages to the intermediary. Moe indicates that he is willing to buy up to 10 PCS, sell up to 10 plums, and, based on how the negotiation progresses, he may be willing to buy or sell up to 16 shares of PG&E. Larry indicates that he wishes to buy up to 10 shares of PG&E and up to 6 plums,

and that he wishes to sell up to 5 PCS. Curly indicates that he wishes to buy up to 10 shares of PG&E and up to 15 PCS, and that he wishes to sell up to 10 plums.

Based on these opening messages, the intermediary will attempt to maximize the total amount of commodities that are exchanged, while fairly allocating amounts according to a pro-rata scheme. Accordingly, since only Larry wants to buy plums and both Moe and Curly want to sell plums, the intermediary at step 12 will offer Larry a purchase of 6 plums, while offering Moe and Curly a sale of 3 plums each; since only Larry wants to sell PCS while Moe and Curly want to buy PCS in the ratio of 2:3, the intermediary will offer to buy from Larry 5 PCS, and will offer to sell to Moe 2PCS and to sell to Curly 3 PCS. Finally, to maximize the exchange of commodities, Moe will be offered a sale of 16 shares of PG&E, with 8 shares each being offered to Larry and Curly for purchase. This process is described in the specification at page 33, line 5, to page 35, line 4.

Next, at step 13, the participants compute and generate counter-offer messages in response to the received initial offer messages from the intermediary. For example, if a participant is satisfied with the offer from the intermediary, it may signal such by sending a counter-offer equal to the offer received from the intermediary. On the other, a participant may send a counter-offer that varies from the initial offer received from the intermediary. For example, Moe may indicate willingness to buy 2 PCS but only if he can sell 5 plums instead of only 3.

At step 14, the intermediary computes whether the counter-offers received from the participants are equal to the previous offers sent to the participants. If so, then the

intermediated negotiation ends at step 16. If not, then at step 15 the intermediary computes subsequent offers based on the current counter-offers from the participants. The process then repeats steps 13, 14 and 15 until all counter-offers received from participants coincide with the last offers made to the participants. Particular protocols for the intermediated exchange are described at page 36, line 25, to page 41, line 25. Generation of offers and counter-offers is described at page 43, line 18, to page 73, line 9.

The claimed invention is particularly adapted to enable institutional investment managers, whose exchange goals deal with large portfolios of commodities rather than individual commodities, to dynamically adapt to changing market conditions.

ISSUES

This appeal presents the following issues for decision by the Board:

- 1) Whether claims 128, 139 and 147 are unpatentable under 35 U.S.C. § 112, fourth paragraph, as being of improper dependent form, and are properly rejected on that basis;
- 2) Whether claims 128, 139 and 147 are unpatentable under 35 U.S.C. § 101 as being directed to non-statutory subject matter, and are properly rejected on that basis;
- 3) Whether claims 116-120, 123, 127-129, 133, 135, 137, 139, 140-143 and 145-147 are anticipated by Silverman et al., U.S. Patent No. 5,924,082 ("Silverman"), and are properly rejected on that basis;
- 4) Whether claims 121, 125, 126, 136 and 138 are obvious over Silverman

under 35 U.S.C. § 103(a), and are properly rejected on that basis;

5) Whether claims 130 and 144 are obvious over Silverman in view of Ausubel, U.S. Patent No. 5,905,975 under 35 U.S.C. § 103(a), and are properly rejected on that basis; and

6) Whether claims 131, 132, and 134 are obvious over Silverman in view of Thiessen, U.S. Patent No. 5,495,412, under 35 U.S.C. § 103(a), and are properly rejected on that basis.

GROUPING OF CLAIMS

For each ground of rejection, the claims will stand or fall together and will not be separately argued in this appeal.

ARGUMENT

The Rejection of Claims 128, 139 and 147 Under 35 U.S.C. § 112 Is Improper

The Examiner alleges that dependent claims 128, 139 and 147 are improper because they “discuss structure (apparatus) in a method claim which is improper because they cannot further limit the method as previously claimed.” The Examiner’s position is erroneous, and should be reversed.

Claims 128, 139 and 147 are in full compliance with the fourth paragraph of 35 U.S.C. § 112, in that those claims incorporate by reference all the limitations of the claims to which they refer, and specify further limitations of the subject matter being claimed by requiring that the method steps be stored as computer-executable instructions in a computer-readable medium.

The fourth paragraph of 35 U.S.C. § 112 does not require that a claim dependent from an apparatus claim contain a structural limitation, or that a claim dependent from a method claim contain a process limitation, but rather merely that the claim specify a further limitation of the subject matter claimed. In this regard, a dependent and independent claim need not necessarily fall within the same statutory class of subject matter. See MPEP § 608.01(n) at 600-77 (8th Edition, 2001). The purpose of the fourth paragraph of § 112 is to prohibit a dependent claim from eliminating or modifying limitations set forth in a previous claim, not to dictate the nature of the further limitations to the subject matter claimed. See Ex parte Porter, 25 USPQ2d 1144, 1147 (BPAI 1992) (a claim is in compliance with the fourth paragraph of 35 U.S.C. § 112 if it incorporates by reference all of the subject matter of another claim, and is not broader than such claim in any respect).

As stated in MPEP § 608.01(n) III, the test as to whether a claim is a proper dependent claim is that it shall include every limitation of the claim from which it depends, or in other words that it shall not conceivably be infringed by anything which would not also infringe the basic claim.

Further, according to MPEP § 608.01(n):

A dependent claim does not lack compliance with 35 U.S.C. § 112, fourth paragraph, simply because there is a question as to (1) the significance of the further limitation added by the dependent claim, or (2) whether the further limitation in fact changes the scope of the dependent claim from that of the claim from which it depends. The test for a proper dependent claim under 35 U.S.C. § 112 is whether the dependent claim includes every limitation of the claim from which it depends. The test is not one of whether the claims differ in scope.

Consequently, claims 128, 139 and 147 are not in violation of the fourth paragraph of 35 U.S.C. § 112, and this ground of rejection, should be reversed.

The Rejection of Claims 128, 139 and 147 Under 35 U.S.C. § 101 Is Improper

The rejection of claims 128, 139 and 147 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is improper and should be reversed.

These claims are directed to a computer-readable medium containing computer-executable instructions which cause a programmable computer to perform the functions specified by the instructions, and as such constitute a useful article of manufacture under § 101. The claims do not embrace two different statutory classes of invention merely by referring to the method steps that the computer is caused to perform when the computer-executable instructions are read into the computer from the computer-readable medium, as set forth in another claim. The steps that the instructions cause the computer to perform could equivalently be repeated in claims 128, 139 and 147 instead of making reference to the independent claim.

The Examiner relies on Ex parte Lyell, 17 USPQ2d 1548 (BPAI 1990) to support this ground of rejection. Lyell is distinguishable from the present case and is inapplicable to the present facts because it involved construction of an independent claim that by its literal terms purported to be “[a]n automatic transmission tool in the form of a workstand and method for using same.” The claim thus purported to claim both an apparatus and a method of using the apparatus in a single claim. Id., 17 USPQ at 1549.

Here, claims 128, 139 and 147 claim a computer-readable medium, not a computer-readable medium and method of using the computer-readable medium. As the Board of Patent Appeals and Interferences explained in Ex parte Porter, each of claims 128, 139 and 147 “could be construed as an independent claim, drafted in a short-hand format to avoid rewriting the particulars of the [method] recited in [claims 116, 129 and 140].” 25 USPQ2d at 1147. Similar to the issue regarding the fourth paragraph of 35 U.S.C. § 112, there is nothing *per se* improper about a dependent claim being in a different statutory category than the claim from which it depends.

Because neither claim 128, claim 139 nor claim 147 purports to claim more than one statutory category of subject matter, these claims do not violate 35 U.S.C. § 101, and this ground of rejection should be reversed.

The Rejection of Claims 116-120, 123, 127-129, 133, 135, 137, 139, 140-143 and 145 Under 35 U.S.C. § 102 Is Improper

The final Office action alleges that Silverman discloses all of the limitations set forth in the rejected claims, and purports to correlate each claim limitation with a corresponding disclosure in Silverman. However, the sections of Silverman relied upon to meet the various claim limitations in fact do not disclose what the Examiner alleges that they disclose. Consequently, this ground of rejection is improper, and should be reversed.

Silverman discloses a matching system for identifying potential counterparties to a transaction based on users’ ranking of other users of the system. The Silverman system

pertains to specialized transactions in which traders use subjective criteria such as the party's credit rating, geographic location, political affiliation, or other subjective criteria, to filter out unacceptable trading parties. The users of the system enter subjective ranking information for all other users, who are identified to each user in a display (see Fig. 3). A user then enters bid/offer information together with minimum rank information (see 507, Fig. 5B) that represents the lowest rank of any potentially acceptable counterparty to the transaction entered by the user.

The matching computer then matches bids and offers entered based on the bid/offer parameters and the ranking information. Once potential matches are identified, the matching computer signals the potential counterparties, by opening a window in each counterparty's computer display (similar to Internet "instant messaging" windows), to enable the parties to communicate with each to commence direct negotiations. See col. 12, ll. 18-21; 53-58. Once the parties agree, signals are sent from their remote terminals to the matching computer indicating that the parties have reached agreement, which thereby cause the matching computer to remove the bid and offer information from the system. See col. 7, ll. 54-63.

Contrary to the present invention as claimed, the Silverman system does not intermediate the exchange of commodities among plural parties through a series of offer and counter-offer messages from the participants to the intermediary and from the intermediary to the participants. Instead, the Silverman system merely identifies potential counterparties to a transaction and then brings the identified parties into contact with each other such that

the parties negotiate the transaction directly. See col. 12, ll. 6-14; see also col. 6, ll. 39-45 and Fig. 2 which illustrates the direct connections between remote terminals (e.g., terminals 101 and 102) bypassing the matching computer 11, for direct communication during negotiations. As Silverman states, “[t]he system does not automatically execute transactions. Instead, the system introduces compatible counterparties who are provided with an opportunity to communicate with one another prior to execution of the transaction to negotiate some or all terms of the transaction.” Col. 12, ll. 59-67.

Thus, contrary to the claimed method of intermediated exchange of commodities, Silverman merely discloses a financial “dating service” that introduces parties to each other based on profiles entered into the system by each user. Once the potentially matching counterparties are introduced to each other, the Silverman system has no further interaction with the parties except to receive a notice that the parties have agreed to transaction terms. Negotiations and completion of the transaction are left to be conducted directly by the parties. See col. 4, ll. 39-41; col. 7, ll. 50-53; col. 12, ll. 10-13; col. 12, ll. 63-67.

In particular, Silverman fails to disclose generating electronic offer messages to the participants from the intermediary in response to received messages from said participants, wherein the electronic offer messages are determined by the intermediary based on said received messages; Silverman further fails to disclose generating electronic counter-offer messages from the participants to the intermediary in response to received electronic offer messages, whereby the substantially-satisfactory offered amounts as negotiated through the

intermediary determine an exchange of a plurality of commodities among a plurality of participants, as set forth in claim 116.

Similarly, Silverman fails to disclose a computer implemented method for intermediating electronic exchange of a plurality of commodities among a plurality of participants as set forth in claim 129, wherein electronic opening and counter-offer messages are received from the participants, and electronic offer messages are generated and sent to the participants, whereby substantially-satisfactory offered amounts determine an intermediated exchange of a plurality of commodities among a plurality of participants.

Silverman further fails to disclose a computer implemented method for representing a participant in an intermediated exchange of commodities with at least one other participant as set forth in claim 140, wherein an electronic opening message is generated to an intermediary, an electronic offer message is received from the intermediary, and one or more electronic counter-offer messages are generated to the intermediary in response to electronic offer messages from the intermediary, whereby the substantially-satisfactory, offered amounts represent each participant's objectives in the intermediated exchange.

The Examiner alleges that the matching computer of Silverman "assists in the negotiations until such time as an agreement is reached," and thus "discloses a mediated negotiating system." However, the claims are not directed simply to "a mediated negotiating system wherein a matching computer assists in negotiations until such time as an agreement is reached." The claims require specific steps in a specific sequence, which are

not disclosed anywhere in the Silverman reference and which do not correspond to the portions of Silverman cited by the Examiner.

One constraint of the Silverman system is that each user's identity must be disclosed to all other users for the matching system based on ranking to function (see Fig. 3 and col. 9, line 25 to col. 10, line 40. To the contrary, the intermediated exchange method and system according to the present invention as set forth in the claims does not require party identification to any other party, and preferably consummates transactions anonymously. In the final rejection (October 8, 2002 at pp. 11-12), the Examiner has erroneously alleged that anonymous transactions are disclosed by Silverman. To the contrary, as shown in Fig. 3 and the corresponding written description, because the Silverman system is based on matching participants with mutually acceptable counterparties, in order to use the Silverman system each participant is presented with the universe of all other participants and must rank all the other participants in order for the system to match bids with offers. Thus, each participant has knowledge of the identity of all other participants. As explicitly stated at col. 12, ll. 14-17, "[a]t the completion of the initiation stage of operation, the identities of the parties are revealed so that they may negotiate the outstanding terms of the transaction in the completion stage."

In view of the above, Silverman does not and cannot anticipate any of claims 116-120, 127-129, 133, 135, 137, 139-143 or 145-147 under 35 U.S.C. § 102 as a matter of law. This ground of rejection thus is improper and should be reversed.

The Rejection of Claims 121, 125, 126, 136, 138, 130 and 144, and 131, 132 and 134 Under 35 U.S.C. § 103 Is Improper

Silverman similarly does not render obvious any of claims 121, 125, 126, 136 or 138 under 35 U.S.C. § 103. These claims include all of the limitations of the independent claims from which they depend, and as such are submitted to be patentable for the same reasons as discussed above. This ground of rejection is improper and should be reversed.

The rejection of claims 130 and 144 under § 103 as being unpatentable over Silverman in view of Ausubel, and the rejection of claims 131, 132 and 134 as being unpatentable over Silverman in view of Thiessen, also are improper, and must be reversed. Neither Ausubel nor Thiessen is relevant to the claimed invention. No combination of Ausubel and/or Thiessen with Silverman would result in the invention of independent claims 116, 129 or 140. Consequently, claims 130-132, 134 and 144 are not rendered obvious by any combination of Silverman with Ausubel and/or Thiessen. Additionally, neither Thiessen nor Ausubel discloses any of the specific limitations of claims 130-132, 134 or 144.

In Ausubel the participants (i.e., the user systems 20, 30 and 40; see Fig. 1) all are on the same side of the transaction. Ausubel states at col. 7, ll. 23-27 that the system may be used in auctions where the auctioneer (i.e., auctioneer system 10, see Fig. 1) is a seller, buyer or broker, and the users are buyers, sellers or brokers, and for auction-like activities which cannot be interpreted as buying or selling. In the instance wherein the Ausubel system is used for auctioning commodities, the auctioneer acts either as a seller, or a broker representing an unidentified seller. See col. 10, l. 39- col. 13, l. 5.

While the Examiner correctly observes that without sellers, there could be no buyers, the Examiner has incorrectly interpreted the Ausubel disclosure that "the negotiation process is initiated by a user (seller) indicating that he has an amount of one or more commodities for sale" as corresponding to the generation of an electronic opening message as recited in the claims. The announcement by the securities firm that it plans to begin an auction at a certain price (Ausubel col. 10, ll. 42-46) is different from and does not correspond to the commencement of a computerized auction by the auctioneer transmitting a message to each user system (Ausubel col. 11, ll. 5-10). The securities firm is not a user of the Ausubel system, but instead is represented by the auctioneer.

In the Ausubel system, an auctioneer generates messages to the users, users generate bid information based on the received messages, and transmit the bid information to a user database. All of the users are on the same side of the transaction, i.e., all of the users are competing with each other to either buy from the auctioneer (where the auctioneer is either the seller or represents the seller) or to sell to the auctioneer (where the auctioneer is either the buyer or represents the buyer).

The auctioneer system then queries the user database, receives answers in response to the queries, and determines if the auction should continue based on the answers received from the user database. If the auctioneer determines that the auction should continue, another message is sent from the auctioneer system to the user systems, and after a predetermined time period the auctioneer again queries the user database. This sequence repeats itself until the auctioneer determines that the auction should not continue. Ausubel

contains no suggestion at all that where the auctioneer acts as a broker (i.e., acts on behalf of a seller) that the seller is one of the users on the user systems 20-40.

Thiessen discloses an interactive computer-assisted negotiation process, wherein parties are assisted in achieving an optimal, mutually satisfactory agreement in dynamic, multi-party multi-issue negotiations. According to Thiessen, each party inputs into the system information pertaining to their own individual preferences on each issue to be negotiated through an interactive graphical interface. Each party also enters a bargaining range that defines the range of acceptable outcomes for each issue. Thiessen thus also is irrelevant to the claimed invention and irrelevant to the Silverman system, such that one of ordinary skill in the art would not have been motivated to modify Silverman in view of Thiessen.

CONCLUSION

In view of the foregoing, claims 116-121, 123 and 125-147 are submitted to be directed to a new and unobvious method for electronic intermediated exchange of commodities among a plurality of participants, which is not taught or suggested by the prior art. The Honorable Board is respectfully requested to reverse all grounds of rejection and to direct the passage of this application to issue.

Please charge any fee or credit any overpayment pursuant to 37 CFR 1.16 or 1.17 to
Deposit Account No. 02-2135.

Respectfully submitted,

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APPENDIX OF CLAIMS ON APPEAL

116. A computer implemented method for an electronic intermediated exchange of a plurality of commodities among a plurality of participants comprising the electronic negotiation steps of:

(a) generating electronic opening messages from the participants to the intermediary, wherein the opening messages comprise digital data representing opening requests of the participants to buy and/or to sell amounts of one or more commodities, and wherein, for at least one commodity both buy and sell requests are generated by participants;

(b) generating electronic offer messages to the participants from the intermediary in response to received messages from said participants, wherein the content of the electronic offer messages are determined by the intermediary based on said received messages and comprise digital data representing offers to the participants respectively to buy and/or to sell amounts of one or more commodities requested in said opening messages by said participants respectively to be sold and/or bought, with each offer being less than or equal to the amounts represented in the corresponding opening request, and wherein, for at least one commodity, the offer messages comprise both buy and sell offers, and wherein, for said at least one commodity, the total of the amounts offered for sale in all the generated offer messages equals the total of the amounts offered for purchase in all the generated offer messages,

(c) generating electronic counter-offer messages from the participants to the intermediary in response to received electronic offer messages, wherein the electronic counter-offer messages comprise digital data representing further requests to buy and/or to sell amounts of one or more commodities with each further request being less

than or equal to the amounts represented in the corresponding opening request, wherein, for at least one commodity, the counter-offer messages comprise both buy and sell requests; and

(d) repeating steps (b) and (c), if necessary, until the last offer message to each participant from the intermediary is indicated in a responsive message to the intermediary from that participant to represent offered amounts of one or more commodities to buy and/or to sell in the exchange that are substantially satisfactory according to that participant's individual exchange objectives,

whereby the substantially-satisfactory offered amounts as negotiated through the intermediary determine an exchange of a plurality of commodities among a plurality of participants.

117. The method of claim 116 wherein the intermediated exchange is determined without any messages being sent directly from any one participant to any other participant.

118. The method of claim 116 further comprising, before the step of generating opening messages, a step of generating a plurality of electronic initial messages from the participants to the intermediary, and wherein the initial messages comprise digital data representing the identities of the commodities that the participants may exchange in the intermediated exchange.

119. The method of claim 116 wherein electronic offer messages are generated so that, after a number of repeats of steps (b) and (c), there is at least one commodity and

at least one participant for which the amount offered for sale or purchase is less than the amount previously offered.

120. The method of claim 116 wherein counter-offer messages sent from each participant are generated so that counter-offered commodity amounts are less than or equal to corresponding offered commodity amounts represented in the previous offer message.

121. The method of claim 116 wherein the messages are generated so that the exchange is determined in 90 seconds or less.

123. The method of claim 116 further comprising, before the step of generating opening messages, a step of receiving and storing by the intermediary of electronic objective messages from an operator of the electronic intermediated exchange, each of the electronic objective messages including digital data representing the objectives of said intermediated exchange.

125. The method of claim 116 further comprising a step of determining, for each participant, the monies due from and the monies due to the participant in dependence on the participant's substantially-satisfactory commodity amounts and on concurrent commodity prices.

126. The method of claim 125 further comprising obtaining the concurrent commodity prices from an external source.

127. A computer system for automatically determining a single simultaneous exchange of a plurality of commodities among a plurality of participants comprising:

one or more processors,

one or more links communicatively connecting the processors, and

one or more memories accessible by the processors and storing program

instructions for causing the processors to perform the method of claim 116.

128. A computer readable medium having stored therein encoded computer-executable instructions for causing a computer to perform the method of claim 116 when said computer-executable instructions are loaded into said computer.

129. A computer implemented method for intermediating electronic exchange of a plurality of commodities among a plurality of participants comprising the steps of:

(a) receiving from the participants

(i) electronic opening messages, which comprise digital data representing opening requests of the participants to buy and/or to sell amounts of one or more commodities, and

(ii) electronic counter-offer messages, which comprise digital data representing further requests of the participants to buy and/or to sell amounts of one or more commodities, with each further request being less than or equal to the amounts represented in the corresponding opening request, and

(b) generating electronic offer messages to the participants,

wherein the offer messages are generated in response to previously received opening messages and/or to previously received counter-offer messages,

wherein electronic offer messages comprise digital data representing respective offers to the participants to buy and/or to sell amounts of one or more commodities corresponding to respective received requests to sell and/or to buy, with each offer being less than or equal to the amounts represented in the corresponding opening request, and

wherein, for at least one commodity, the opening messages and the offer messages comprise requests to buy and requests to sell, and, for each commodity, the total of the amounts offered for sale in all the generated offer messages equals the total of the amounts offered for purchase in all the generated offer messages, and

(c) repeating steps (a) and (b), if necessary, until the last offer message to each participant is indicated in a responsive message from that participant to represent offered amounts of one or more commodities to buy and/or to sell in the exchange that are substantially satisfactory according to that participant's individual exchange objectives,

whereby the substantially-satisfactory offered amounts determine an intermediated exchange of a plurality of commodities among a plurality of participants.

130. The method of claim 129 wherein the offer messages are generated so that the total amounts of the commodities offered for exchange in all offer messages are substantially maximized.

131. The method of claim 129 wherein the offer messages are generated so that a measure of the unfairness of the share of commodities offered to each participant is substantially minimized.

132. The method of claim 131 wherein the measure of unfairness increases as the share of commodities offered to the participants differs from a pro-rata share.

133. The method of claim 129 wherein the step of generating the electronic offer messages further comprises substantially maximizing the value of a utility function of the amounts of commodities subject to constraints.

134. The method of claim 133 wherein the utility function comprises a difference of a first term and a second term, the first term representing the total amount of all commodities offered to the participants and the second term representing the unfairness of the share of commodities offered to the participants.

135. The method of claim 129 wherein offer messages are generated so that, after a number of repeats of steps (a) and (b), there is at least one commodity and at least one participant for which the amount offered for sale or purchase is less than the amount previously offered.

136. The method of claim 129 further comprising:

obtaining commodity prices concurrent with the intermediated exchange from an external source, and

determining, for each participant, the monies due from and the monies due to the participant in dependence on the participant's substantially-satisfactory commodity amounts and on the concurrent commodity prices.

137. A computer system for automatically intermediating a single simultaneous exchange of a plurality of commodities among a plurality of participants comprising:

a processor, and

a memory accessible by the processor and storing program instructions for causing the processor to perform the method of claim 129.

138. The system of claim 137 further comprising a communication link to an external source of commodity prices.

139. A computer readable medium having stored therein encoded computer-executable instructions for causing a computer to perform the method of claim 129 when said computer-executable instructions are loaded into said computer.

140. A computer implemented method for representing a participant in an intermediated exchange of commodities with at least one other participant, comprising the steps of:

generating an electronic opening message to an intermediary, wherein the electronic opening message comprises digital data representing an opening request of the participant to buy and/or to sell amounts of one or more commodities;

receiving an electronic offer message from said intermediary to respectively sell and/or buy amounts of one or more commodities in response to said electronic opening message and a corresponding electronic opening message from said at least one other participant; and

generating one or more electronic counter-offer messages to the intermediary in response to said electronic offer message in accordance with the participant's individual exchange objectives,

wherein the electronic counter-offer messages comprise digital data representing (i) further requests to buy and/or to sell amounts of one or more commodities with each further request being less than or equal to the amounts represented in the corresponding opening request, or (ii) an indication that the amounts in a received offer message are substantially satisfactory to the participant,

wherein each counter-offer message is generated in response to an electronic offer message,

wherein an electronic offer message comprises digital data representing offers to the participant to buy and/or to sell amounts of one or more commodities in accordance with objectives of the intermediated exchange, with the offers being less than or equal to the amounts represented in the corresponding opening request, and

whereby the substantially-satisfactory, offered amounts represent each participant's objectives in the intermediated exchange.

141. The method of claim 140 wherein the sending participant's substantial satisfaction with the previous offer message is indicated when the following counter-offer message represents the same amounts of one or more commodities to buy and/or to sell as are represented in the previous offer message.

142. The method of claim 140 wherein the counter-offer messages are generated so that counter-offered commodity amounts are less than or equal to corresponding offered commodity amounts represented in the previous offer message.

143. The method of claim 140 wherein the step of generating counter-offer messages further comprises evaluating one or more procedural rules.

144. The method of claim 140 wherein the step of generating counter-offer messages further comprises evaluating a portfolio theory.

145. The method of claim 140 wherein the step of generating counter-offer messages further comprises substantially maximizing a utility function.

146. A computer for automatically representing a participant in an intermediated exchange of a plurality of commodities comprising:

a processor, and

a memory accessible by the processor and storing program instructions for causing the processor to perform the method of claim 140.

147. A computer readable medium having stored therein encoded computer-executable instructions for causing a computer to perform the method of claim 140 when said computer-executable instructions are loaded into said computer.